WHAT IS CLAIMED IS:

1. An optical disc drive for reading data from an optical disc and/or writing data on an optical disc having an information storage layer, comprising:

a light source;

a collector optics for focusing light from the light source;

a light-receiving section for receiving a peripheral part of the light reflected by the information storage layer to generate a first detection signal and for receiving a non-peripheral part of the light to generate a second detection signal;

a first focus signal generating section for generating a first focus signal based on the first detection signal according to a focusing state of the light in the peripheral part;

a second focus signal generating section for generating a second focus signal based on the second detection signal according to a focusing state of the light in the non-peripheral part;

a first light quantity generating section for generating a first light quantity signal based on the first detection signal according to a light quantity of the peripheral part;

a second light quantity generating section for generating a second light quantity signal based on the second detection signal according to a light quantity of the non-peripheral part;

a first normalizing section for generating a first normalized signal by normalizing the first focus signal based on the first light quantity signal;

a second normalizing section for generating a second normalized signal by normalizing the second focus signal based on the second light quantity signal; and

a detecting section for generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.

2. The optical disc drive according to claim 1, further comprising a third focus signal generating section for calculating a sum of the first focus signal and the second focus signal to generate a third focus signal indicating a focusing state of the light.

3. The optical disc drive according to claim 1, wherein the detecting section calculates a difference between the first normalized signal and the second normalized signal to generate the spherical aberration signal.

4. The optical disc drive according to claim 1, further comprising:

a driver for generating a drive signal according to the spherical aberration signal; and

a correcting section for changing optical characteristics of a path of the light according to the drive signal and for correcting the spherical aberration produced at the focusing position of the light.

5. The optical disc drive according to claim 4, wherein the correcting section corrects a spherical aberration substantially to 0 according to the drive signal.

6. The optical disc drive according to claim 5, further comprising:

a focus control section for generating a position changing signal according to the third focus signal; and

a position changing section for changing a position of the collector optics perpendicularly to the information storage layer according to the position changing signal and changing the focusing position of the light.

7. The optical disc drive according to claim 1, wherein the first normalizing section generates values of the

first normalized signal by dividing values of the first focus signal by values of the first light quantity signal, and

the second normalizing section generates signal values of the second normalized signal by dividing values of the second focus signal by values of the second light quantity signal.

8. An optical disc drive for reading data from an optical disc and/or writing data having an information storage layer, comprising:

a light source;

a collector optics for focusing light from the light source;

a light-receiving section for receiving a peripheral part of the light reflected by the information storage layer to generate a first detection signal and for receiving a non-peripheral part of the light to generate a second detection signal;

a first focus signal generating section for generating a first focus signal based on the first detection signal according to a focusing state of the light in the peripheral part;

a second focus signal generating section for generating a second focus signal based on the second detection signal according to a focusing state of the light in the non-peripheral part;

a first measuring section for measuring amplitude of the first focus signal to generate a first amplitude signal;

a second measuring section for measuring amplitude of the second focus signal to generate a second amplitude signal;

a first normalizing section for generating a first normalized signal by normalizing the first focus signal based on the first amplitude signal;

a second normalizing section for generating a second normalized signal by normalizing the second focus signal based on the second amplitude signal; and

a detecting section for generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.

9. The optical disc drive according to claim 8, further comprising:

a driver for generating a drive signal according to the spherical aberration signal; and

a correcting section for changing optical characteristics of a path of the light according to the drive signal and for correcting the spherical aberration produced at the focusing position of the light.

10. The optical disc drive according to claim 9, wherein the correcting section corrects a spherical aberration substantially to 0 according to the drive signal.

11. The optical disc drive according to claim 8, further comprising a position changing section for changing a position of the collector optics perpendicularly to the information storage layer and for changing the focusing position of the light,

wherein when the position changing section changes the position of the collector optics perpendicularly to the information storage layer,

the first measuring section detects a maximum level and a minimum level of the first focus signal and measures a difference between the maximum level and the minimum level as amplitude of the first focus signal, and

the second measuring section detects a maximum level and a minimum level of the second focus signal and measures a difference between the maximum level and the minimum level as amplitude of the second focus signal.

12. An optical disc drive for reading data from an optical disc and/or writing data on an optical disc having an

information storage layer, comprising:

a light source;

a collector optics for focusing light from the light source;

a light-receiving section for receiving the light reflected by the information storage layer to generate a detection signal;

a spherical aberration detecting section for generating a spherical aberration signal based on the detection signal according to a quantity of spherical aberration produced at a focusing position of the light;

a light quantity detecting section for generating a light quantity signal based on the detection signal according to a quantity of the light; and

a normalized aberration detecting section for normalizing the spherical aberration signal based on the light quantity signal to generate a normalized spherical aberration signal.

13. The optical disc drive according to claim 12, wherein the light-receiving section has light-receiving elements including a first light-receiving element and a second light-receiving element, and wherein, in receipt of the light, the first light-receiving element receives a peripheral part of the light reflected by the information

storage layer and the second light-receiving element receives a non-peripheral part of the light, and as a result of the reception, at least one of a first detection signal generated in the first light-receiving element and a second detection signal generated in the second light-receiving element is outputted to the light quantity detecting section.

14. The optical disc drive according to claim 12, wherein the light-receiving section further includes a third light-receiving element for receiving an entire light to generate a third detection signal, and wherein the light-receiving section outputs at least one of a first detection signal generated in the first light-receiving element and a second detection signal generated in the second light-receiving element and the third detection signal to the light quantity detecting section.

15. The optical disc drive according to claim 13, wherein each of the light-receiving elements generates a detection signal having a signal level according to received light quantity, and wherein the light-receiving section outputs one of the detection signals having a maximum signal level to the light quantity detecting section.

16. A method for reading data from an optical disc

and/or writing data on an optical disc having an information storage layer, comprising steps of:

focusing light from a light source;

receiving a peripheral part of the light reflected by the information storage layer to generate a first detection signal;

receiving a non-peripheral part of the light to generate a second detection signal;

generating a first focus signal based on the first detection signal according to a focusing state of the light in the peripheral part;

generating a second focus signal based on the second detection signal according to a focusing state of the light in the non-peripheral part;

generating a first light quantity signal based on the first detection signal according to a light quantity of the peripheral part;

generating a second light quantity signal based on the second detection signal according to a light quantity of the non-peripheral part;

generating a first normalized signal by normalizing the first focus signal based on the first light quantity signal;

generating a second normalized signal by normalizing the second focus signal based on the second light quantity signal; and generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.

17. A method for reading data from an optical disc and/or writing data on an optical disc having an information storage layer, comprising steps of:

focusing light from a light source;

receiving a peripheral part of the light reflected by the information storage layer to generate a first detection signal;

receiving a non-peripheral part of the light to generate a second detection signal;

generating a first focus signal based on the first detection signal according to a focusing state of the light in the peripheral part;

generating a second focus signal based on the second detection signal according to a focusing state of the light in the non-peripheral part;

measuring amplitude of the first focus signal to generate a first amplitude signal;

measuring amplitude of the second focus signal to generate a second amplitude signal;

generating a first normalized signal by normalizing the first focus signal based on the first amplitude signal;

generating a second normalized signal by normalizing the second focus signal based on the second amplitude signal; and

generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.

18. A method for reading data from an optical disc and/or writing data on an optical disc having an information storage layer, comprising steps of:

focusing light from a light source;

receiving the light reflected by the information storage layer to generate a detection signal;

generating a spherical aberration signal based on the detection signal according to a quantity of spherical aberration produced at a focusing position of the light;

generating a light quantity signal based on the detection signal according to a quantity of the light; and

normalizing the spherical aberration signal based on the light quantity signal to generate a normalized spherical aberration signal.

19. A computer program product for use with an optical disc drive to read data from an optical disc and/or to write

data on an optical disc having an information storage layer, wherein the computer program product causes the optical disc drive to perform steps of:

focusing light from a light source of the optical disc;

receiving a peripheral part of the light reflected by the information storage layer to generate a first detection signal;

receiving a non-peripheral part of the light to generate a second detection signal;

generating a first focus signal based on the first detection signal according to a focusing state of the light in the peripheral part;

generating a second focus signal based on the second detection signal according to a focusing state of the light in the non-peripheral part;

generating a first light quantity signal based on the first detection signal according to a light quantity of the peripheral part;

generating a second light quantity signal based on the second detection signal according to a light quantity of the non-peripheral part;

generating a first normalized signal by normalizing the first focus signal based on the first light quantity signal;

generating a second normalized signal by normalizing the second focus signal based on the second light quantity signal; and

generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.

20. A controller circuit for controlling operations of an optical disc drive, having a light source and a light-receiving section, to read data from an optical disc and/or to write data having an information storage layer, comprising:

a microcomputer which causes the light source to emit light and which causes the light-receiving section to receive a peripheral part and a non-peripheral part of the light reflected by the information storage layer to generate a first detection signal from the peripheral part and a second detection signal from the non-peripheral part;

a first focus signal generating section for generating a first focus signal based on the first detection signal according to a focusing state of the light in the peripheral part;

a second focus signal generating section for generating a second focus signal based on the second detection signal according to a focusing state of the light in the non-peripheral part;

a first light quantity generating section for generating a first light quantity signal based on the first detection signal according to a light quantity of the peripheral part;

a second light quantity generating section for generating a second light quantity signal based on the second detection signal according to a light quantity of the non-peripheral part;

a first normalizing section for generating a first normalized signal by normalizing the first focus signal based on the first light quantity signal;

a second normalizing section for generating a second normalized signal by normalizing the second focus signal based on the second light quantity signal; and

a detecting section for generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.